

# **PRINCIPLES OF INTEGRATING RESEARCH INTO TEACHING IN HIGHER EDUCATION: A KNOWLEDGE TRANSFER PERSPECTIVE**

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## **Abstract**

Integrating new knowledge created through research with teaching has become an important area that needs prompt attention with the growing emphasis on student learning activities, quality assurance procedures and research funding mechanisms within the UK higher education system. The link between research and teaching is not automatic. Thus, it needs to be formally created in higher education departments in order to achieve a productive relationship and manage research activities of university staff with teaching duties. The research study on which this paper is based on, aims to develop principles to enable transfer of research knowledge into teaching. This study is different from previous approaches in that it looks into the research and teaching link as a two-way knowledge transfer process in the light of growing knowledge management viewpoints. In developing the framework, this research uses the case study approach. Finally, the research introduces principles of research to teaching transfer that are applicable for higher education institutions.

**Keywords:** Higher Education, Knowledge Transfer, Learning, Research, Teaching.

## **1. Research and Teaching (R&T)**

University research and teaching has been viewed by academics in different ways (Robertson & Bond, 2001). Healey (2000) and Brew (2003) state that the way that academics interpret the terms research, scholarship and teaching can influence on the R&T relationship. For example, some authors view research as outcome-oriented (external) while others view it as learning-oriented (internal). Brew (2003) states that most academics view scholarship as the way academics value professionalism. Teaching is equally valued as a scholarship after Boyer (1990). Healey (2000) argues that research into teaching should be included as a key element of the scholarship of teaching.

Badley (2002) synthesises R&T relationships based on these different interpretations: namely, 'an impending divorce'; 'a martial relationship'; 'a holy alliance'; 'a scholarly relationship'; and, 'a really useful link' (see Figure 1). In an impending divorce, separate institutions exist for research and teaching. For example, in USA existence of research institutions and teaching-only or all-teaching institutions; and, in UK, identification of research-led and teaching-led departments. In a martial relationship, research is viewed as the male partner and teaching as the female partner. In a holy alliance view, research is seen as a generator of uncertainty; and, teaching needs to address this uncertainty. In a scholarly relationship, research and teaching are separate but overlapping scholarly activities. For example, Boyer (1990) includes research and teaching in his typology of scholarship: the scholarship of knowledge discovery and integration; and, the scholarship of knowledge application. Badley (2002) adds a 'really useful link' by seeing R&T in an interactive relationship. Thus, the R&T link is seen from different viewpoints based on the different interpretations of the terms research, teaching and scholarship.

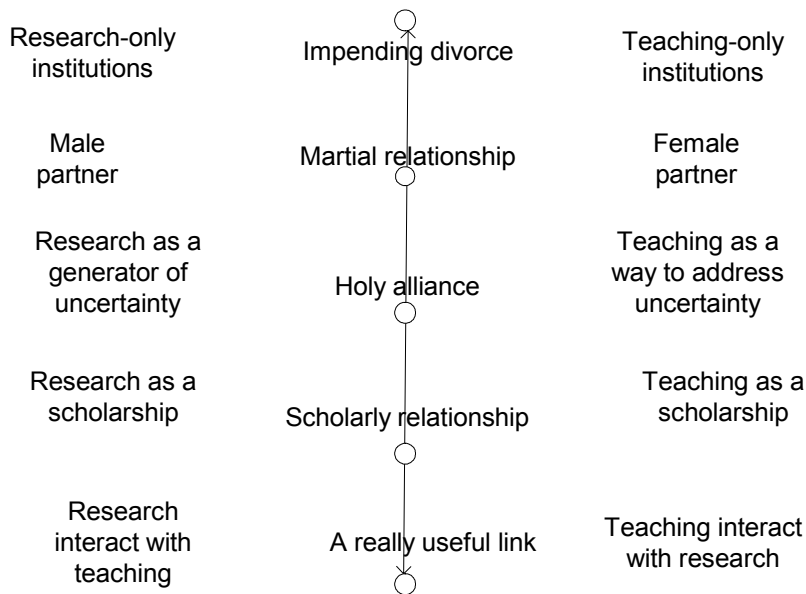


FIGURE 1: Different interpretations of the R&T relationship

To approach ‘a really useful link’ (Badley, 2002) or ‘a symbiotic relationship’ (Robertson & Bond, 2001) most academics believe in research-informed teaching, in particular, that good research is necessary for good teaching. Clark (1997) states that professors generally find their own teaching and research activities ‘merging in a seamless blend.’ According to Lindsay et al (2002), academics believe that research and teaching is one of ‘symbiosis’; ‘mutuality’; and, ‘synergy’, especially when lecturer’s research activity increased in quantity and quality. They reveal that lecturer’s research activity enhances knowledge currency; credibility; competence in supervision; motivation; and, salience. According to Jenkins (2000), an effective way to link research and teaching is managing staff research to benefit student learning, which will benefit both students and staff; and, also, will improve knowledge development and learning within universities. However, increased lectures’ research will result in reduced contact time, teaching time and curriculum distortion (Lindsay et al, 2002). Thus, balancing individual staff’s research and teaching activities is needed to get academics engaged in research and, thereby, stimulate research-informed teaching.

Teaching informed by lecturer's own research should not be the only way to link research with teaching. In fact, Brew (2003) argues that all academics need not be good researchers; what is more important is that sharing research among academics. Barnett (1992) offers similar views and questions the need for every academic to engage in research. As mentioned above, Badley (2002) introduces an effective way to link research and teaching which he calls as 'a really useful' link. According to him, more than research-informed teaching it is about dialogical and dialectical processes between teachers and students. As most studies confirm, research and teaching are loosely coupled activities, which may not have a necessary or an automatic link; and, therefore, it is necessary to create this link to achieve a productive relationship (Jenkins & Zetter, 2003). Recent studies address this issue and introduce different strategies to create a beneficial relationship rather than the problematic one that naturally exists. Elton (2001) describes that strategies to link R&T depend on various factors such as the unit of assessment (individual, departmental, institutional); level of competence (teaching or research); perspectives of stakeholders (academic staff, students, administrators, funding bodies); and, cultural factors (different countries, international dimension). Among these, the most influencing factors as identified in several studies are the type of department, discipline and level of study.

As Jenkin & Zetter (2003) argue, it is the academic departments who should develop this effective link. This is a two-way link (i.e. Research into Teaching [RtoT]; and, Teaching into Research [TtoR]) in which learning becomes the overlapping concept. Rowland (1996) describes this two-way link: research improves quality of university teaching while students' understanding and work can contribute to lecturer's research. However, the transfer should be appropriately created depending on whether the department is teaching-biased or research-biased. For teaching-biased departments, which have limited research funds, the R&T link should focus towards developing a research profile by creating research activities through teaching (for example, see Gorden et al, 2003). That is, the knowledge should flow from teaching to research. On the other hand, research-biased departments can create the link to benefit teaching from their research activities. In that, these departments can help students to appreciate the value of research within the

department by creating this flow from research into teaching. Comparing this two-way nature of the R&T link, the transfer of research into teaching, is comparatively difficult; and, is a long-term process that also involve students' motivation and commitment. By identifying this increased importance of RtoT transfer over TtoR transfer, the research study on which this paper is based focuses on how to implement RtoT transfer specifically in research-biased departments.

Research has also found that the R&T link is dependent on different disciplines (for example, see Healey, 2004). 'Linking Research & Teaching' (Online 1) is a national project that has broadly studied the R&T link in a variety of disciplines such as geography, biosciences, law, health science and hospitality disciplines. An associated project, namely LINK: Good Practice Resources Database (Online 2) explores the R&T link specifically in the built environment sector. In addition, the work of Fawcett et al (2003) on nursing; and, the work of Cech (2003) and Sears & Wood (2005) on bioscience provide useful insights into this link. However, Griffiths (2004) explains that the boundaries between disciplines are becoming less important with the growth of inter-disciplinarity; yet, at the broader level, there exist differences that affect the R&T link. The research study on which this paper is based initially focuses on the BE discipline, which is a fertile area (Link, Online 2) to investigate the complex R&T relationship.

The literature further reveals that this research knowledge transfer is more problematic at undergraduate compared to postgraduate (McLernon & Hughes, 2003; Jenkins, 2000; Lindsay et al, 2002)). Further difficulties in feeding research into undergraduate teaching come from modular systems, dynamism of research and constraints of syllabi (McLernon & Hughes, 2003). Thus, the study specifically explores the undergraduate level while expanding to postgraduate level where appropriate. The extant literature on research and teaching relationship has failed to appreciate research into teaching as a knowledge transfer process; therefore, has ignored useful insights that could be gained from the knowledge age. The next section brings in knowledge management perspectives to this transfer process and develops a better understanding on the phenomenon.

## **2. Research into Teaching as a Knowledge Transfer Process**

Some pedagogical researchers have identified the importance of knowledge management perspectives on university research and teaching. For example, Jenkins (2000) states that knowledge economy demands academics to be creative and gain ability to create; find; and, synthesise new knowledge. Scott (2002, p13) state, “in a ‘knowledge society’ all students –certainly all graduates – have to be researchers. Not only are they engaged in production of knowledge; they must also be educated to cope with risks and uncertainties generated by the advance of science.” Scott (2004), further, laments that in the knowledge society research and teaching are no more separable activities; and, the impact of the knowledge society has been to make research and teaching even more transgressive. Brew (2003) puts across knowledge-based views with respect to research and teaching link. Accordingly, research and teaching are seen as activities where individuals and groups negotiate meanings and build knowledge within a social context. Brew (2003) brings in the concept of academic community of practice where academic departments, disciplines, sub-specialisms, a university as a whole, or networks of professionals interact through face-to-face settings to disseminate research knowledge. Rowland (1996) has also emphasised on the importance of student-teacher interaction, improving interactive settings such as projects, tutorials and seminars in creating the R&T link. Badley (2002) through his ‘really useful’ link suggests similar views: the importance of dialogical and dialectical processes between teachers and students. Thus, a key finding that emerges through the extant R&T literature that addresses knowledge management viewpoints is the importance of interaction and interactive settings in creating the R&T link.

More insights can be gained by viewing research into teaching as a knowledge transfer process. According to Sexton & Barrett (2004), knowledge transfer is viewed as the movement of knowledge via some channel from one individual or firm to another. In this context, this means movement of research knowledge (be it research findings, skills or processes) from researchers (be they academics, researchers or practitioners) to students

(be they undergraduates or postgraduates) through teaching and other mediums such as seminars, workshops, conferences and project-based work.

According to Davenport & Prusak (1998), effective knowledge transfer does not involve mere transmission but also absorption and use following such a transmission. As such, initiating the R&T link in a department and feeding research knowledge into teaching is insufficient; the transfer needs to ensure that such knowledge is absorbed and used by students after a transmission. Huberman (2002) confirms this when he claims that research data penetrates very slowly into the consciousness of the potential user, helped along by discussions and observations. According to him, the dissemination of research knowledge depends on its usefulness to the user and the absorptive capacity of the users. Accordingly, when students are considered as the potential users of such a transfer process, their learning process followed by such a transfer is an essential consideration.

In summary, the educational research has established that R&T link is not automatic and need to be created in each academic department based on the discipline. The knowledge transfer literature values the importance of student perspectives and maintenance of R&T link following an immediate transmission process. With these key findings from the literature, the research moves to the case study research methodology.

### **3. Case Study Research**

The case studies were designed by identifying the unit of analysis and a sampling strategy. The unit of analysis considered was academic departments within a university while the study expanded to individual and university levels where appropriate. The sampling strategy was to identify departments that focus on vocational or social science disciplines. Accordingly, study first selected a department on built environment with a 6\* research assessment rating as an exploratory case study. The aim of this exploratory phase was primarily to validate and examine the literature findings; and, thereby, to formulate a framework based on the built environment (BE) discipline. Subsequently, departments that focus on disciplines such as information technology; sociology; nursing;

geography; and, management were selected for detailed case studies. The aim of these case studies was to identify a more generic set of principles when transferring research into teaching. The multiple data collection methods such as semi-structured interviews, workshops and documents surveys were used to triangulate data. The case study data were content analysed and emerging themes were identified through pattern-matching between theoretical data and observed data. The final outcome was the development of a set of principles which is presented next

#### **4. Principles of Research to Teaching Transfer**

Seven principles were developed based on the case study findings.

First, both literature and case studies frequently identified the importance of research-informed teaching. Findings revealed that it is essential for academics to be research-active in order to deliver good quality teaching. If academics are research-active the transfer of research into teaching will happen naturally and informally. Thus,

*Principle One: Academics need to be effectively research-active so their teaching will be naturally research-informed.*

Second, the study identifies the importance of teaching approach in delivering research knowledge to students. Student-focused teaching is suggested by many pedagogical researchers as the most effective teaching method. In addition, case study findings highlighted the importance of cultivating research skills such as critical thinking and analysis in students by research knowledge transfer. Therefore,

*Principle Two: Academics need to consider effective teaching methods such as student-focused teaching; and, stimulate students' critical thinking by providing them with research training and knowledge.*



Third, according to Boyer (1990), an academic should develop three types of scholarship: scholarship of discovery, integration and application. Hence, importance of balancing every academic's workload is emphasised in literature. Case study findings, further, revealed that academics, especially, experienced senior staff should engage in teaching at all levels in undergraduate and postgraduate courses. Thus,

*Principle Three: Academic departments need to appropriately balance an academic's research and teaching workloads so that experienced research-active staff is engaged in teaching across all levels.*

Fourth, even though, research-informed teaching is the key to transfer research into teaching, many academics agreed that there should be formal processes to aid natural mechanisms. Therefore,

*Principle Four: Academic departments should consider formal processes to transfer research into teaching to stimulate research-informed teaching.*

Fifth, academics pointed that it is important to maintain and evaluate the success of knowledge transfer mechanisms and how they enhance student-learning processes. Hence,

*Principle Five: Following such a formal transfer process, academic departments should maintain and evaluate its success; especially student-learning followed by such a transfer.*

Sixth, as case study findings revealed, formal mechanisms should not mislead its members to feel that it is a separate process. Both literature and case studies emphasised that departments should have a research to teaching culture where everyone is actively and effectively involved. Thus,

*Principle Six: Research into teaching should not be a separate process; it should take place everywhere across a department so that it is built into the culture of that department with an appropriate balance between formal and informal processes.*

Seventh, considering knowledge management concepts and views of academics, the transfer should go beyond academic departmental level to a wider community where everyone effectively share and disseminate research knowledge and good teaching practices. Therefore, finally,

*Principle Seven: At a broader level, the university should create an academic community of practice where academic departments, disciplines and, a university as a whole or networks of professionals interact through face-to-face settings to disseminate research knowledge to a wider community.*

## **5. Conclusions**

The importance of research knowledge transfer into teaching has been identified and debated by many authors with differing viewpoints ranging from the type of the discipline to types of departments. Key areas such as knowledge management and learning have been largely ignored in the search for effective strategies of research knowledge into teaching. This research had developed set of principles to transfer research knowledge into teaching through case studies across several disciplines such as built environment, information technology; sociology; nursing; geography; and, management. Finally, based on the findings, this research proposed seven principles of research into teaching transfer. These principles, as a whole, offer significant contributions to higher education departments in integrating research with their teaching activities.

## 6. References

- Badley, G. (2002). "A really useful link between teaching and research." Teaching in Higher Education 7(4): 443-455.
- Barnett, R. (1992). "Linking research and teaching: a critical inquiry." Journal of Higher Education 63(613-636).
- Boyer Commission on Educating Undergraduates in the Research University (1998). Reinventing Undergraduate Education: A Blueprint for America's Research Universities. Carnegie Foundation for the Advancement of Teaching, CA.
- Brew, A. (2003). "Teaching and Research: New relationships and their implications for inquiry-based teaching and learning in higher education." Higher Education Research & Development 22(1): 3-18.
- Cech, T. R. (2003). "Rebalancing Teaching and Research: Editorial." SCIENCE 299(10): 165.
- Clark, B. R. (1997). "The modern integration of research activities with teaching and learning." Journal of Higher Education 68: 241-255.
- Davenport, T. H. and L. Prusak (1998). Working knowledge: how organisations manage what they know. Boston, Harvard Business School Press.
- Elton, L. (2001). "Research and Teaching: conditions for a positive link." Teaching in Higher Education 6(1): 43-56.
- Fawcett, J., C. Aber, et al. (2003). "Teaching, Practice and Research: An integrative approach benefiting students and faculty." Journal of Professional Nursing 19(1): 17-21.

Gorden, G., V. D'Andrea, et al. (2003). Building capacity for change: research on the scholarship of teaching- the report to HEFCE. Bristol, [www.hefce.ac.uk/pubs/rcreports/2003/rcre02](http://www.hefce.ac.uk/pubs/rcreports/2003/rcre02).

Griffiths, R. (2004). "Knowledge production and the research-teaching nexus: the case of the built environment disciplines." Studies in Higher Education **29**(6): 709-726.

Healey, M. (2000). "Developing the scholarship of teaching in higher education: A discipline based approach." Higher Education Research and Development **19**(2): 169-189.

Healey, M. (2004). Linking research and teaching: exploring disciplinary spaces and the role of inquiry-based learning. Reshaping the University: New Relationships between Research, Scholarship and Teaching. R. Barnett. McGraw Hill, Open University Press.

Huberman, A. M. (2002). "Moving Towards the Inevitable: the sharing of research in education." Teachers and Teaching **8**(3/4): 257-268.

Jenkins, A. (2000). "The relationship between Teaching and Research: where does geography stand and deliver?" Journal of Geography in Higher Education **24**(3): 325-351.

Jenkins, A. and R. Zetter (2003). Linking Research and Teaching in Departments. LTSN Generic Centre, Learning and Teaching Support Network, Oxford Brookes University, UK.

Lindsay, R., R. Breen, et al. (2002). "Academic Research and Teaching Quality: the views of undergraduate and postgraduate students." Studies in Higher Education **27**(3): 309-327.

McLernon, T. and D. Hughes (2003). Research versus Teaching in the built environment discipline. CIB W89 Building Education and Research Conference, Salford.

Online 1 Linking Research & Teaching. [www.ltsn.ac.uk/genericcentre](http://www.ltsn.ac.uk/genericcentre)

>projects>Research & Scholarship>Linking Research & Teaching.

Online 2 LINK: Good Practice Resource Database.

<http://www.brookes.ac.uk/schools/planning/LTRC/team.html>.

Robertson, J. and C. Bond (2001). "Experiences of the relation between teaching and research: what do academics value?" Higher Education Research and Development **20**(10): 5-19.

Rowland, S. (1996). "Relationships between teaching and research." Teaching in Higher Education **1**(1): 7-20.

Scott, P. (2002). "Let's stop trying to separate the inseparable." Exchange **2**: 27-28, [www.exchange.ac.uk](http://www.exchange.ac.uk).

Scott, P. (2004). Knowledge work in a knowledge society: rethinking the links between university teaching and research, The keynote speech presented at the Higher Education Academy Learning and Teaching conference, The University of Hertfordshire, UK., [http://www.heacademy.ac.uk/curriculum/ICO18D\\_KnowledgeWork.doc](http://www.heacademy.ac.uk/curriculum/ICO18D_KnowledgeWork.doc).

Sears, H. J. and E. J. Wood (2005). " Linking teaching and research in the biosciences." Bioscience Education E-journal **5**: 1-20, <http://www.bioscience.heacademy.ac.uk/journal/vol5/beej-5-4.pdf>.

Sexton, M. & Barrett, P. 2004. "The role of technology transfer in innovation within small construction firms." Engineering, Construction and Architectural Management, **11**(5): 342-348.